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Artacama valparaisiensis, a new species of Terebellidae (Annelida: Polychaeta) from subtidal soft bottoms of Valparaiso Bay, Chile

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Abstract.—A new species of terebellid, *Artacama valparaisiensis,* is described from Valparaiso Bay, Central Chile. The species closely resembles *A. crassa* Hartman, 1967, from the South Shetland Islands, Antarctica, but can be distinguished on the basis of the following morphological criteria: shape and number of proboscidial papillae, size and number of the branchial filaments, relative size of lobe at the upper edge of uncinal ridges in abdominal parapodia and presence of constrictions in the limbate setae.

Systematics of the Terebellidae was reviewed recently by Holthe (1986). According to his review, *Artacama* Malmgren, 1866, with eight valid species is the only genus in subfamily Artacaminae. McHugh (1995) has carried out a cladistic analysis of the Terebellidae in which she shows that *Artacama* is the sister taxon of a large clade within the Amphitritinae. The Artacaminae has therefore been synonymized with the Amphitritinae, which is diagnosed by the presence of double rows of uncini on posterior thoracic segments. The character that identified the Artacaminae, a peristomium modified on its ventral side to form a conspicuous proboscis-like organ adorned with papillae, is considered an autapomorphy for the genus *Artacama* (McHugh 1995). Only two species of *Artacama, A. crassa* Hartman, 1967 and *A. proboscidea* Malmgren, 1866, have been reported from southeastern Pacific, in antarctic and subantarctic waters (Rozbaczylo 1985). From 1978 to 1980 an extensive research program on benthic communities at Valparaiso Bay, Central Chile, was carried out by Dr. José Stuardo (presently at Universidad de Concepción) and Dr. Héctor Andrade (presently at A & A Tecnolab S.A., División Ambiental). Three areas with different particle size (sand, sandy-mud and sandy-silt), organic matter and other biochemical components were sampled, from 34 to 59 meters depth. Samples from these areas have been studied by Stuardo et al. (1981) regarding their biochemical and granulometric composition. They showed that among the three sampled areas there were differences in proteins, lipids and organic matter; the sandy-mud area showed the highest values and sandy area the lowest values. Among the abundant polychaetes collected during that program numerous individuals of *Artacama* were found. These differed from the other known species reported for the genus, and consequently are described as a new species.

Specimens of the new species were compared with the holotype of *A. crassa* deposited in the National Museum of Natural History, Washington, D.C. (USNM 55569) and a specimen of *A. proboscidea* from Western Canadian Arctic (USNM 41132) identified by E. & C. Berkeley.

Type and paratype specimens of the new species are deposited in the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM); Sala de Sistemática, Departamento de Ecología,

Pontificia Universidad Católica de Chile, Santiago (SSUC); and Museo de Zoología, Universidad de Concepción (UCCC).

Materials and Methods

Polychaetes were collected at Valparaiso Bay, Central Chile. Samples were taken monthly, from November 1979 to October 1980, with a 0.1 m^2 Van Veen dredge at three areas with different particle size (sand, sandy-mud and sandy-silt), from 34 to 59 meters depth. Polychaetes were fixed in 10% formalin and preserved in 70% ethanol. Figures were prepared by means of a drawing tube on a Wild M-5 microscope. Scanning electron microscopic (SEM) observations and photographs were obtained using a JEOL JSM-25SII microscope.

Artacama valparaisiensis, new species Figs. 1, 2

Material examined.—Central Chile: Valparaiso Bay, off Punta Osas, ca. 32°59′20″S, 71°33′56″W, 44 m, H. Andrade, coll., 9 Jul 1979, holotype (USNM 170005), and 14 paratypes (USNM 170006); 4 Sep 1979, 8 paratypes (UCCC 23169–23176), and 14 paratypes (SSUC 6719).

Description.—Holotype incomplete with 52 setigers, measuring about 60 mm long, width about 9 mm at thorax. Body (Fig. 1a) thick anteriorly and colorless in alcohol, with first 8–11 segments enlarged, tapers posteriorly to a narrow pygidial end. Total length of one of the largest complete specimens, is 104 mm including proboscis, width 12 mm at thorax and 4 mm at abdomen, and consists of 102 setigerous segments; 17 thoracic setigers and 85 abdominal setigers. Large, ovoid and papillose proboscis (Fig. 1a) extends forward from buccal segment below mouth. Prostomium (Fig. 1b) is small folded, bilobed structure, with small oral aperture immediately below. Eyes absent. Small, horseshoe-shaped tentacular lobe on dorsal side of peristomium, with a dorsal indentation and numerous tentacles, short and clubbed, most of which are broken. Proboscis covered overall with numerous, conical and minute, papillae (Fig. 1c) arranged in about ninety longitudinal rows. Lateral lappets absent on segments 2–4. Three pairs of long filiform branchiae on segments 2–4; each branchia is a tuft of approximately 50 equal-length filaments arising from basal stump. Nephridiopores, in form of short tubes, number five pairs; the best developed are on segment 3 below second pair of branchiae, in line with the more posterior notopodia; smaller ones are on segments 6, 7, 8 and 9, between notopodia and uncinal ridges, postero-ventral to notopodia. Ventral glandular pads present on first 10 setigers. Thorax with fixed number of setigers; seventeen bundles of notosetae starting on segment 4; uncini first present from the second setiger (fifth segment); occur in single rows on first six uncinal ridges, then in double rows from setigers 8 to 17, oriented "fang to fang." Thoracic notopodia (Fig. 1d) with triangular lamellae, postsetal lobe larger than presetal; 40–50 long, pointed setae decreasing in length from dorsal to ventral part of notopodia, laterally winged, with one or two constrictions (Fig. 1e). Thoracic neuropodia with avicular uncini with a large fang surmounted by four or five alternating rows of many small teeth (Fig. 2a, b). Abdomen with numerous segments bearing parapodia (Fig. 1g, h) with flaplike tori and dorsally large, subcircular membrane which increase in size towards the posterior end; uncini in single rows restricted to ventral margin; abdominal uncini resemble thoracic but main fang is longer and thinner and have six or seven alternating rows of teeth (Figs. 1f, 2c, d).

Posterior end tapers to terminal pygidium (Fig. 1i), with terminal anus, with crenulate sides.

Geographical distribution.—Known only from Valparaiso Bay, Chile.

Remarks.—*Artacama valparaisiensis* new species resembles, most closely, *A. crassa* Hartman, 1967 and *A. proboscidea* Malmgren, 1866. However *A. valparaisien-*

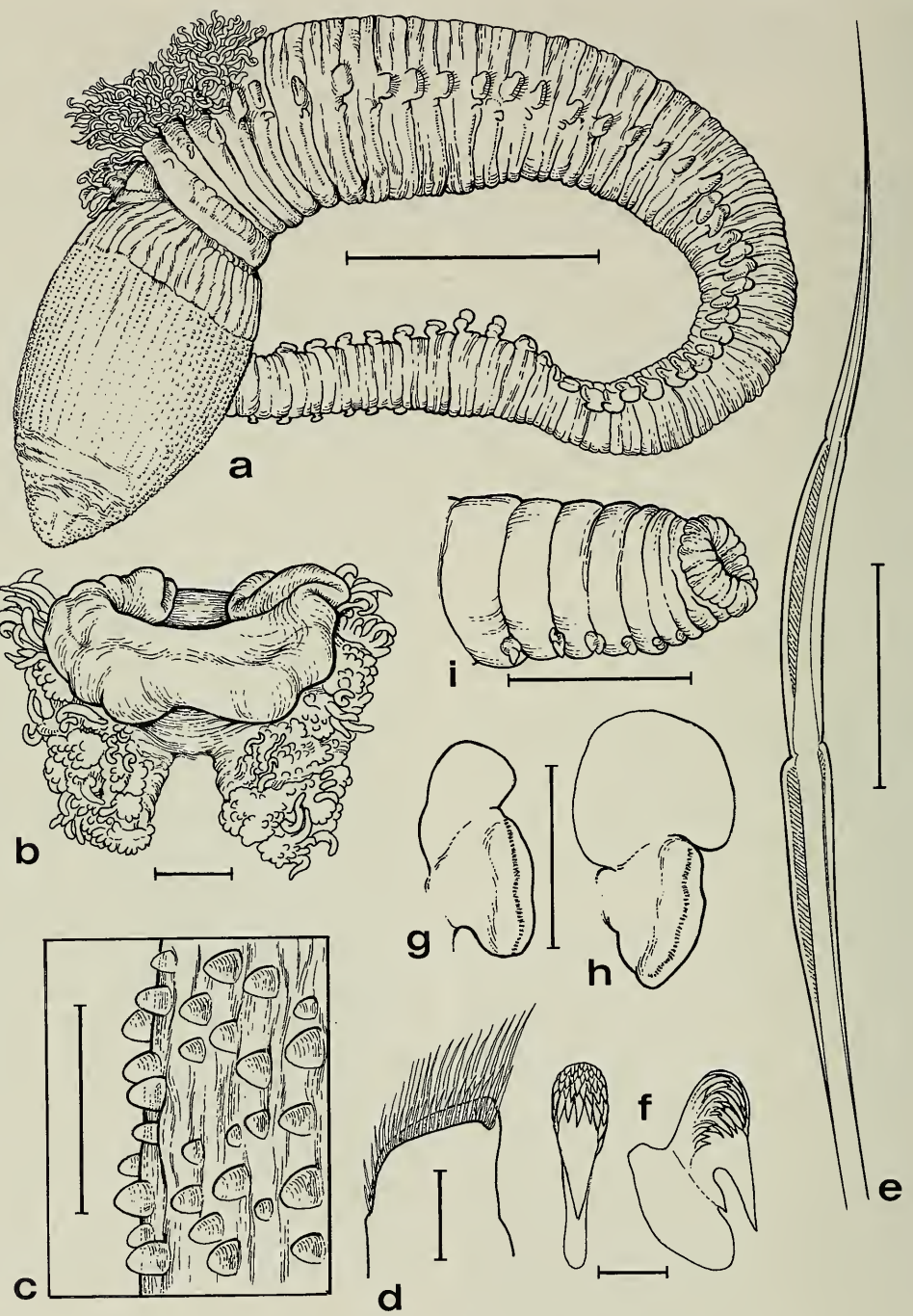

Fig. 1. *Artacama valparaisiensis* new species (USNM 170005). a, entire animal in left lateral view; b, prostomium in dorsal view with the oral aperture immediately below; c, proboscidial papillae; d, thoracic parapodium, right side anterior view; e, limbate thoracic notoseta from fifth setiger, in lateral view showing constrictions; f, abdominal uncinus in frontal and lateral view, from tenth abdominal parapodium; g, second abdominal parapodium, right side anterior view, with large foliaceous dorsal lobe and uncinal torus; h, tenth abdominal parapodium, right side anterior view, with large foliaceous dorsal lobe and uncinal torus; i, posterior end, in lateral view. Scales = 1 cm for a; 1 mm for b, g, h, i; 0.5 mm for c, d; 0.01 mm for f; 0.1 mm for e.

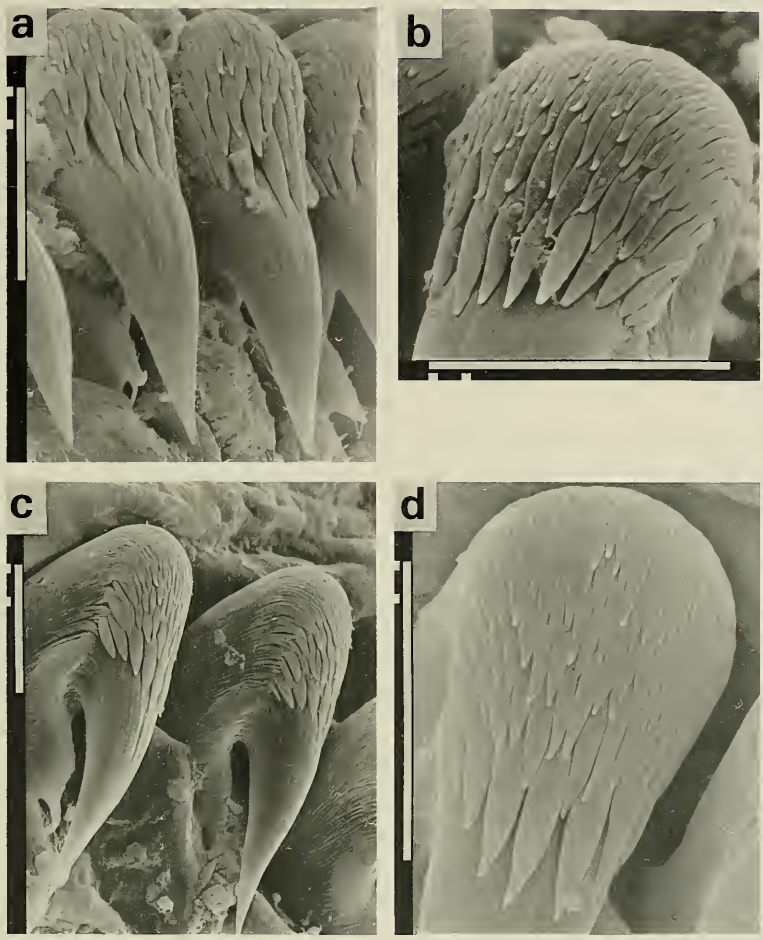

Fig. 2. *Artacama valparaisiensis* new species, SEM micrographs: a, thoracic uncini in lateral view from the first uncinigerous segment (fifth thoracic segment); b, detail of the upper part of an uncinus of thoracic segment 11 (first segment with double rows of uncini); c, abdominal uncini in lateral view from the fourth abdominal segment; d, detail of the upper part of an uncinus of the fourth abdominal segment. Scales = 0.01 mm for a–d.

sis differs from *A. crassa* in that papillae of the proboscis are more abundant, conical, and smaller; the number of branchial filaments is higher (ca. 50 in each branchiae) and each filament is longer and thinner; presence of constrictions in the limbate setae; thoracic notopodia with postsetal lamellae longer than presetal lobe, while in *A. crassa* both lobes are short; abdominal parapodia with the uncinigerous tori longer and the dorsal membrane comparatively smaller. On the other hand, *A. proboscidea* shows fewer branchial filaments, shorter and thicker than those of *A. valparaisiensis.* Papillae of the proboscis of *A. proboscidea* are bigger and fewer than in *A. valparaisiensis.* Dorsal membrane of abdominal parapodia of *A. valparaisiensis* is bigger than those of *A. proboscidea.* Absence of constrictions in the limbate setae of *A. proboscidea.* McIntosh (1885) described *A. challengeriae* from several localities off Kerguelen Islands, 46–202 m; Hartman (1959) considers this species similar to *A. proboscidea.* Description of *A. challengeriae* is so general and vague that it is difficult to compare it with *A. valparaisiensis.* Nevertheless, from figures (Pl. LI. fig. 6; Pl.

XXVIIIA. figs. 23a, b, 24, 25) in McIntosh (1885) can be established that *A. challengeriae* differs from *A. valparaisiensis* at least in that the former has proboscidial papillae bigger an fewer; edges of limbate setae are entire, without constrictions; ventral margin of uncini presents an ondulating outline while in *A. valparaisiensis* has a uniform and slight convexity the same as in *A. crassa* and *A. proboscidea.*

Etymology.—The specific name *valparaisiensis* refers to the type locality, Valparaiso Bay.

Ecological remarks.—Artacama valparaisiensis was more abundant between May and September, with densities of 100 indiv./m^2 in May and 250 indiv./m^2 in September. The species showed the highest density in the sandy-mud area (30–250 indiv./m^2), the second one was the sandy-silt area (5–100 indiv./m^2); at the sandy area the species was extremely rare. In the sandy area few specimens of small size were found only in May and September while in the sandy-mud and sandy-silt areas numerous specimens of different size were found throughout the sample period. This pattern of distribution appears to be correlated with the different organic matter content of sediments in the sites sampled (Stuardo et al. 1981). In the population studied it was possible to distinguish adult females by the presence of eggs in the coelomic cavity. Maximum egg size was 165 μm diameter.

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